

Value & employment effects of a bottom-up approach: The example of Tunisia

Dr. Ulrike Lehr, GWS – Institute of Economic Structures Research

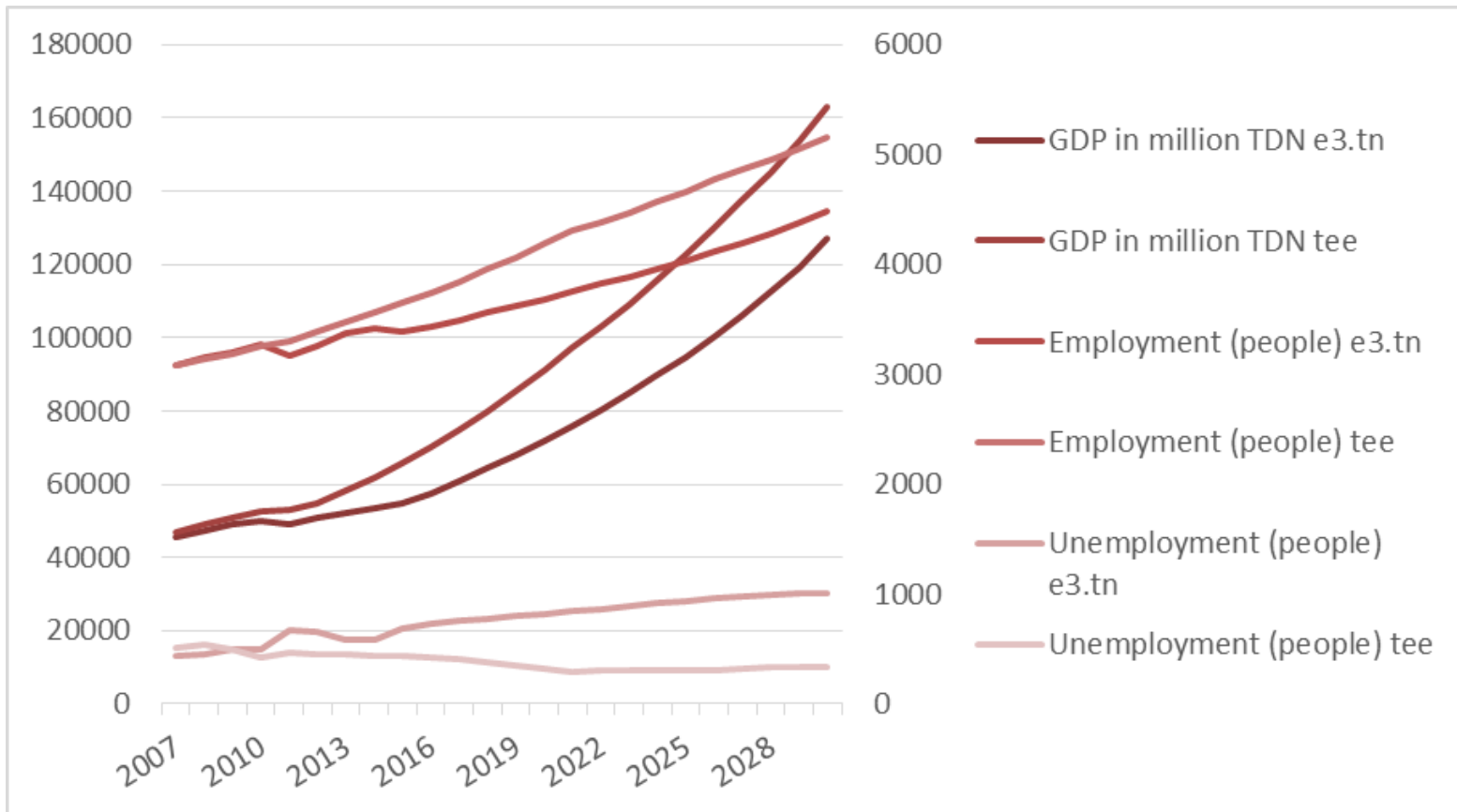


The Project

- Joint research effort by ALCOR, ECO-ser (Tunisia) and GWS
- Update of research published in 2012 by GIZ and commissioned to the same consortium
- Main question then and now:
- **How many jobs from renewables and efficiency?**
- Economic changes, structural changes, new plans and scenarios and the development in renewable energy, in particular the costs of PV made **this update** necessary



Economic projections in comparison to 2011





Why Tunisia?

- ✓ Tunisia is a good example for a developing country, which has a policy for energy conservation for a comparably long time period - since the mid-80s.
- ✓ This policy has accelerated mainly from the mid-2000s in the light of increasing oil prices and a constantly increasing energy deficit.
- ✓ Launch of a national energy debate in 2013 to define the strategic objectives anew in consultation with concerned public and private organizations, civil society, financial organizations, universities...



The new Tunisian renewable energy (RE) and energy efficiency (EE) strategy

Main targets

- Reduce of primary energy demand, by 17% in 2020 and 34 % in 2030, compared to the baseline scenario
- Reach a share of 30% of renewable energy in electricity generation by 2030
- Reduce GHG emissions by about 48% in 2030, compared to the baseline scenario

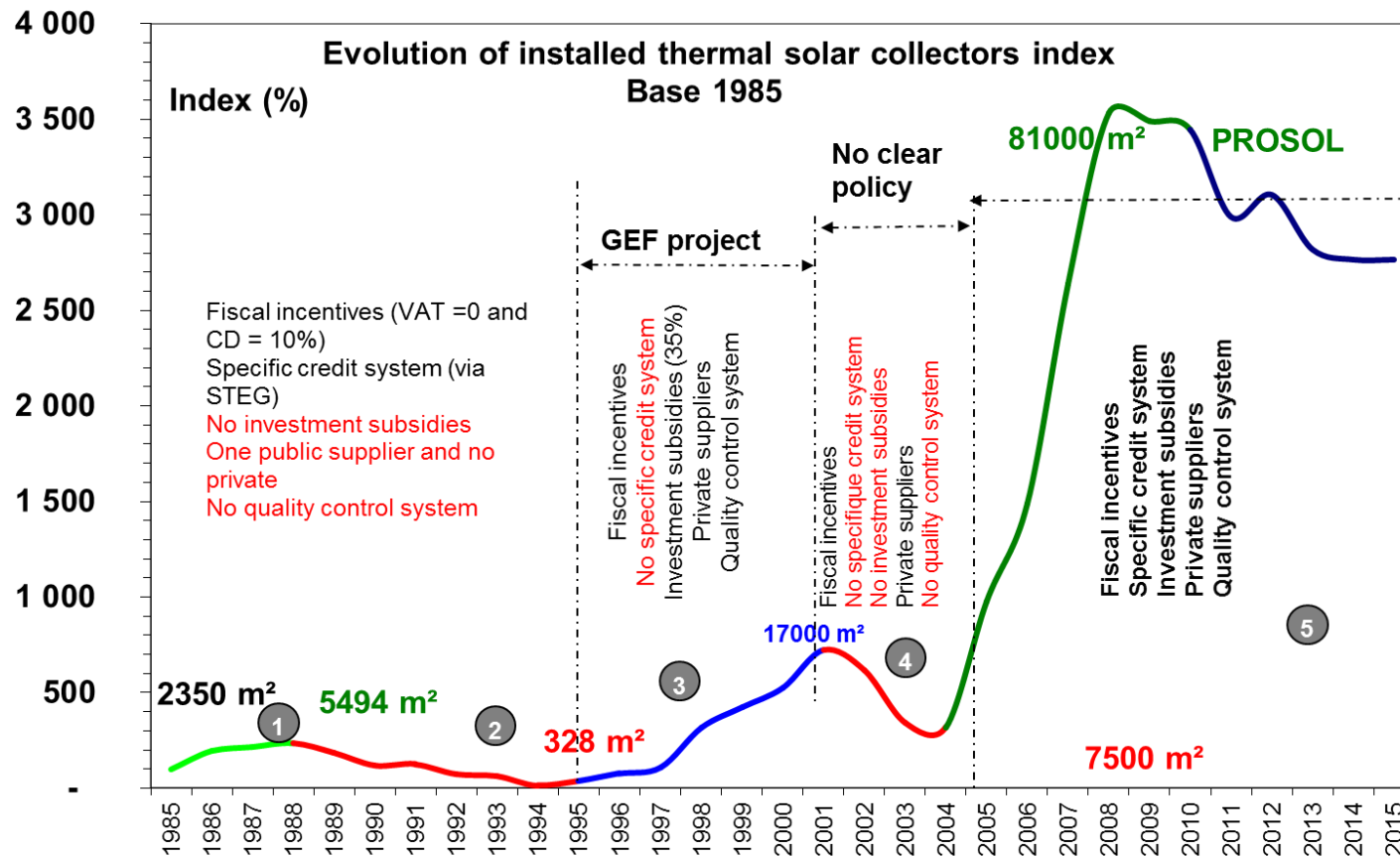


Instruments and regulatory framework

- **National Fund for Energy Conservation (FNME) created in 2005,**
- **Implementation of a three-year-program (2005-2007)**
- **Implementation of the next four-year-program (2008-2011)**
- **Tunisian Solar Plan**



An example for successful regulation – PROSOL





Less successful yet - cogeneration

- Support launched in 2001
- Regulation on rules and procedures for implementation of cogeneration
- Companies developing a cogeneration project receive an investment subsidy of up to 500.000 DT
- Potential of about 600 MW
- At the end of 2015 app. 70 Mwe in place, which was the target for 2011



The study answers the following questions

- **Ex-post analysis – what has been achieved in terms of jobs?**
- **Ex-ante analysis – what can be achieved from a scenario which reaches the targets – in terms of jobs?**

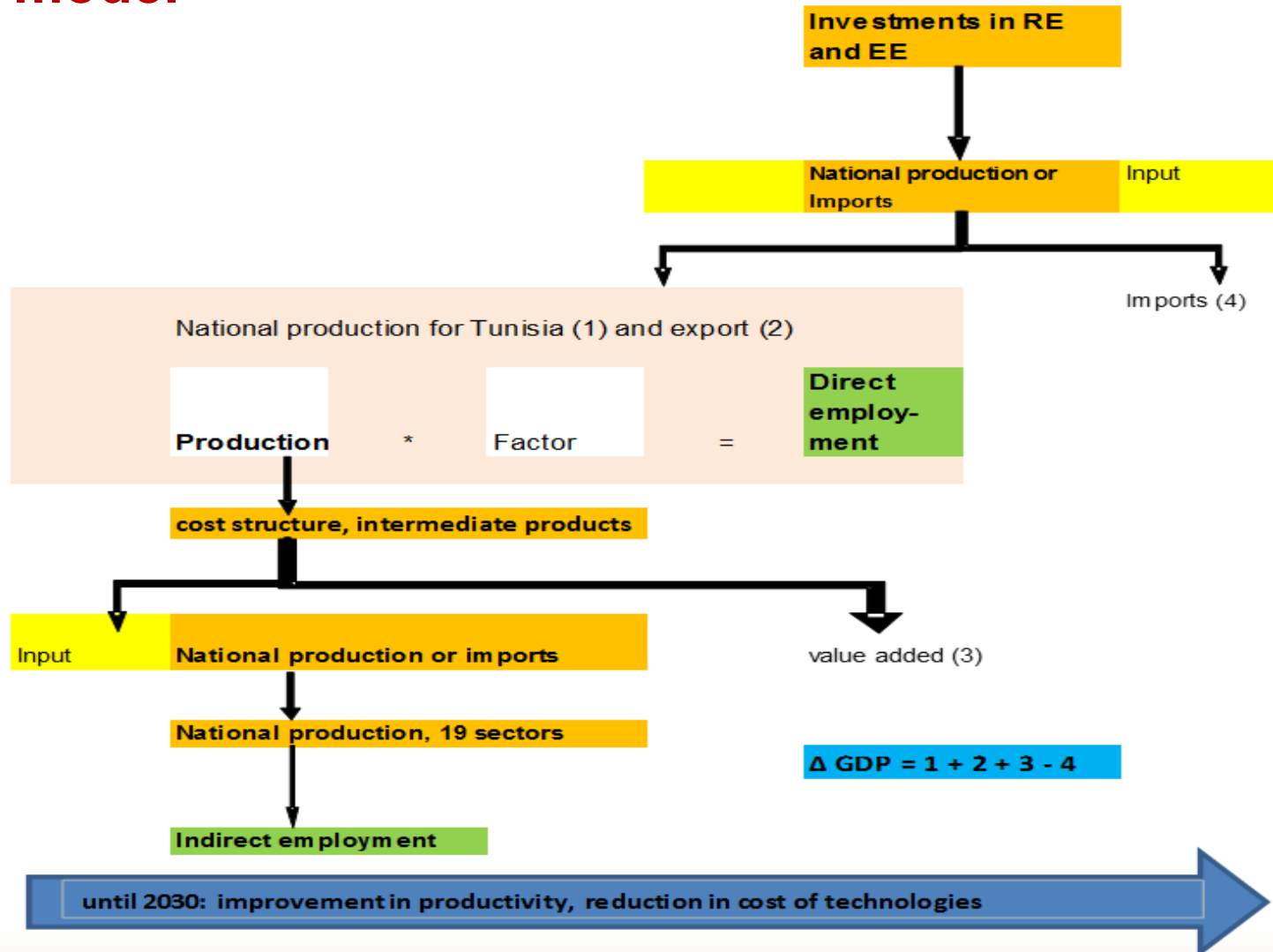


Our approach

- Economic model for Tunisia based on economic Input-Output theory
- Combination of
 - Economic data from Tunisian Statistical Office (INS) on industrial structures in Tunisia, GDP forecast, population forecast
 - Scenarios for the development of renewable energy and energy efficiency in Tunisia
 - Literature data and international cost structures of renewable energy
- Projection until 2030
- Model with a User-friendly interface, fully transparent.



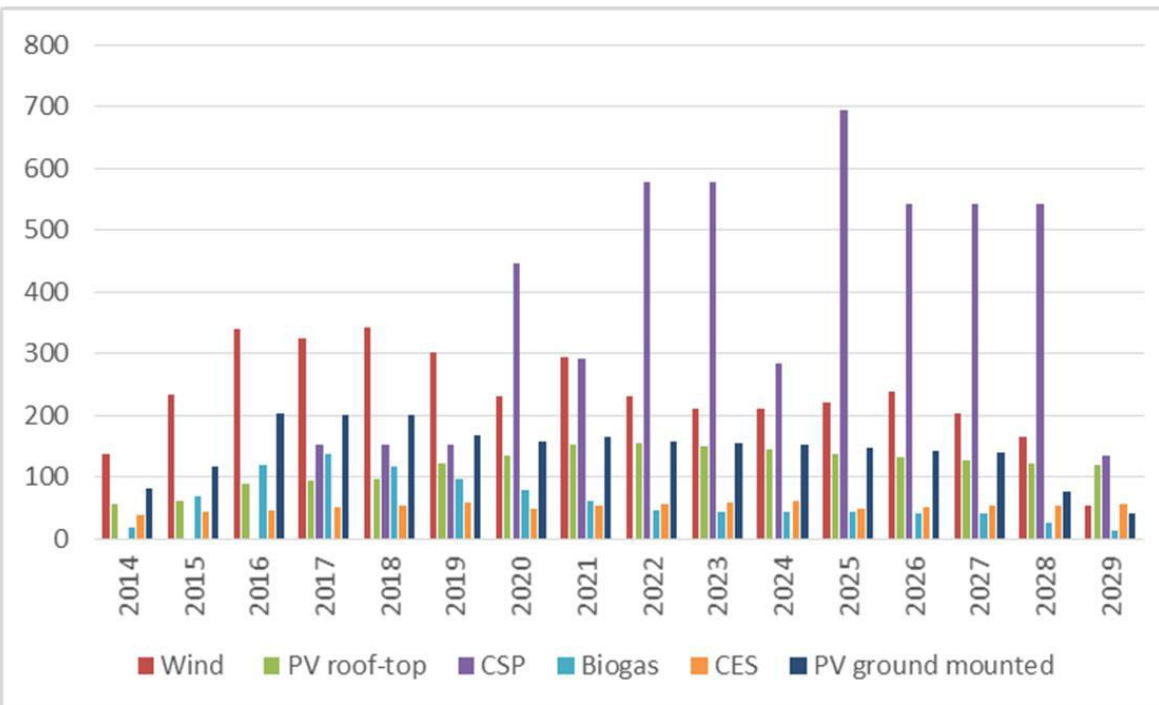
The model





Economic drivers (1)

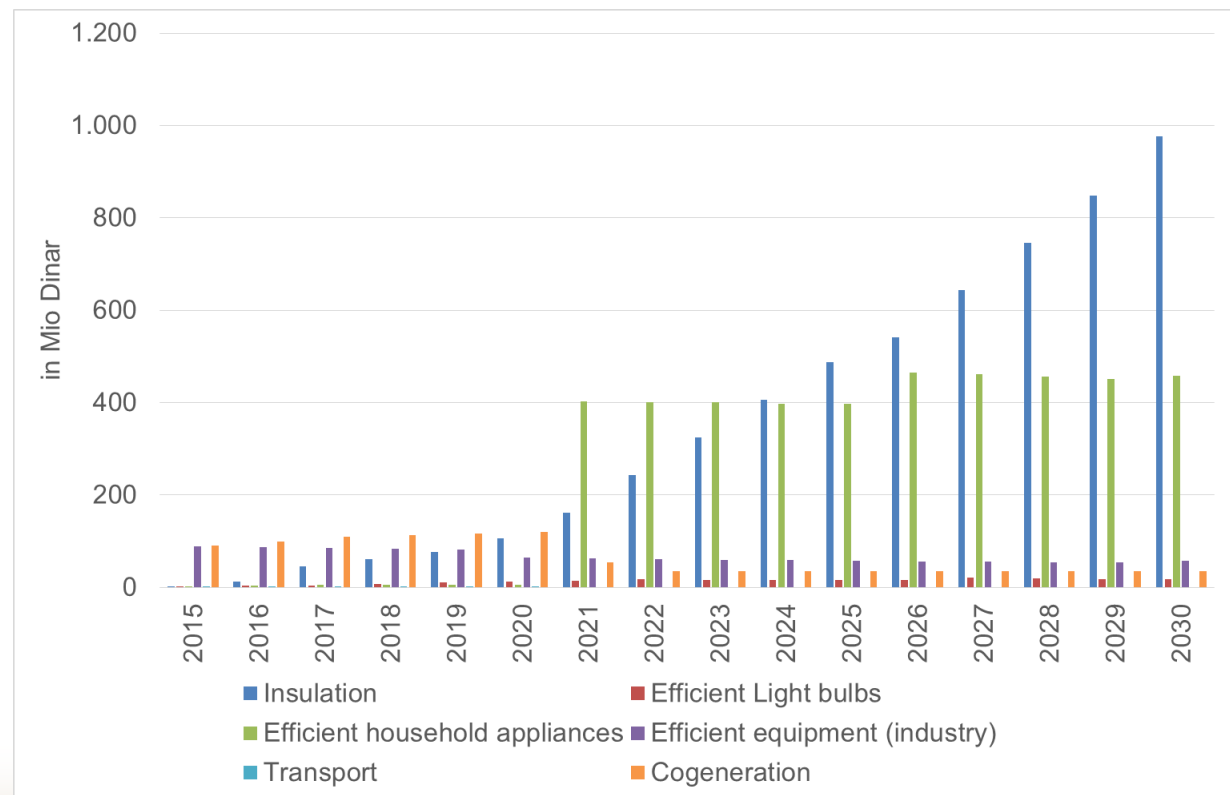
- Investment in RE&EE is the most important driver – in the model as well as in reality
- The scenario EEER contains:
 - Investment in renewables





Economic drivers (2)

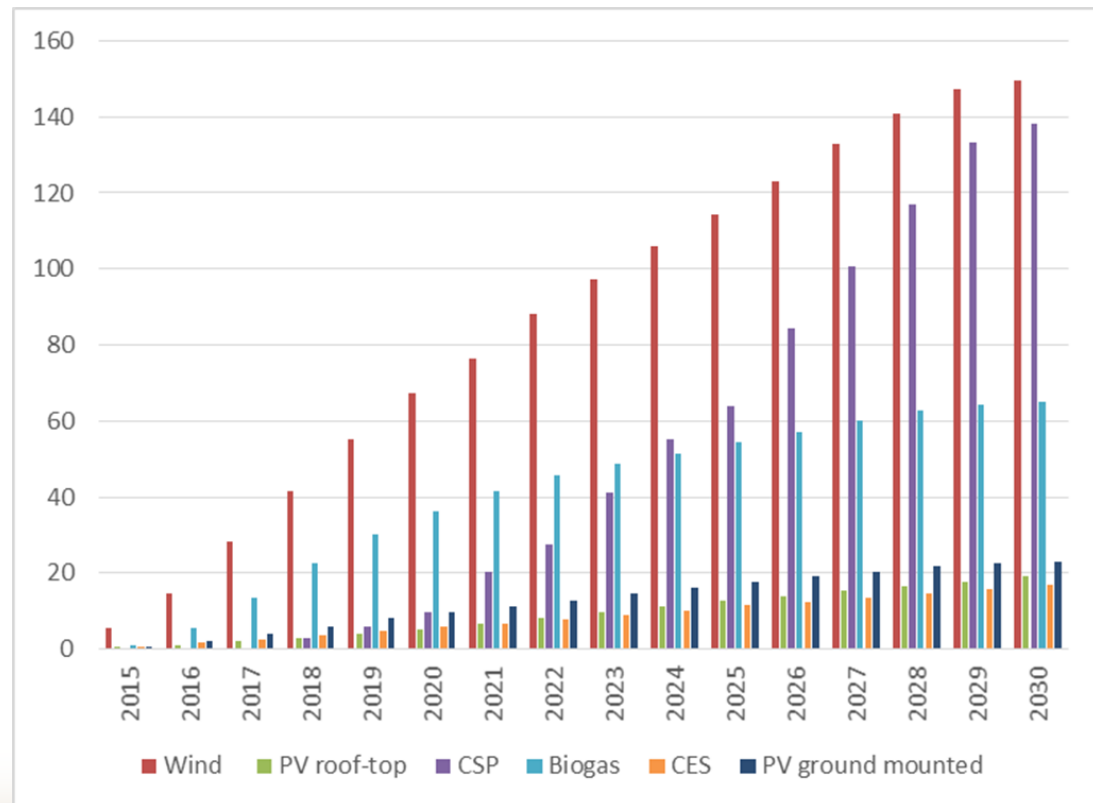
- Investment in efficiency
- Dominated by buildings, following recommendations among other by GIZ 2012





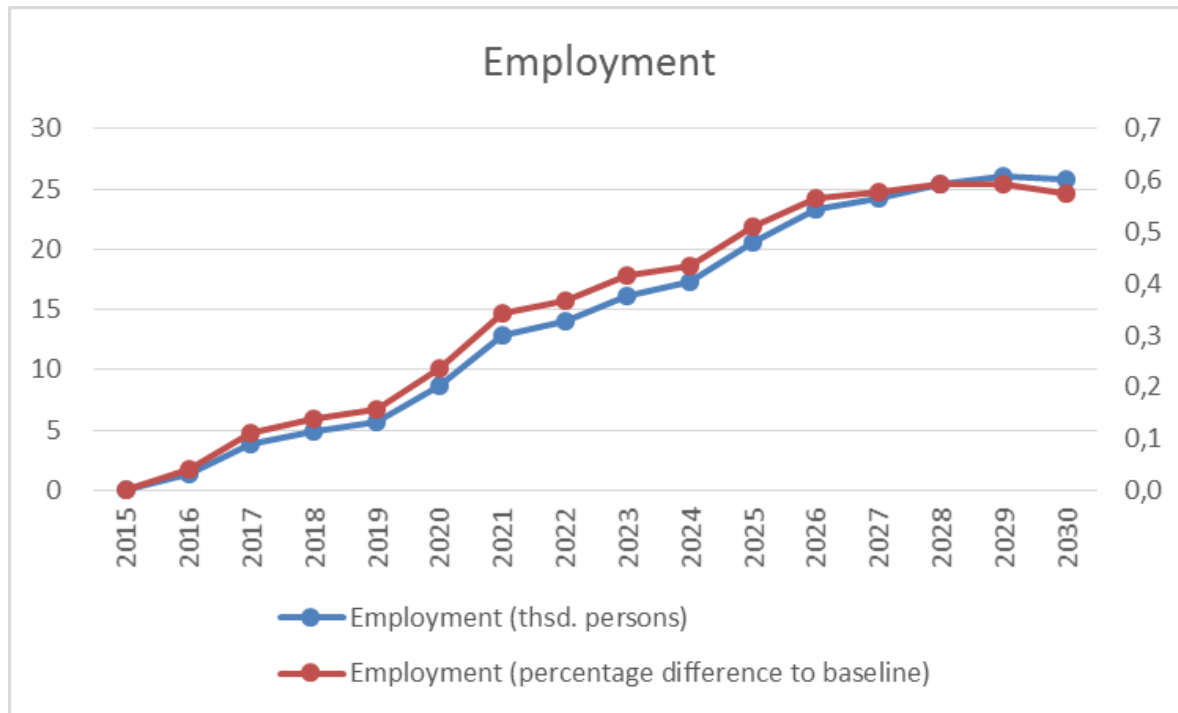
Economic drivers (3)

- Expenditures for operation and maintenance of RE systems
- Increasing over time
- Wind dominates





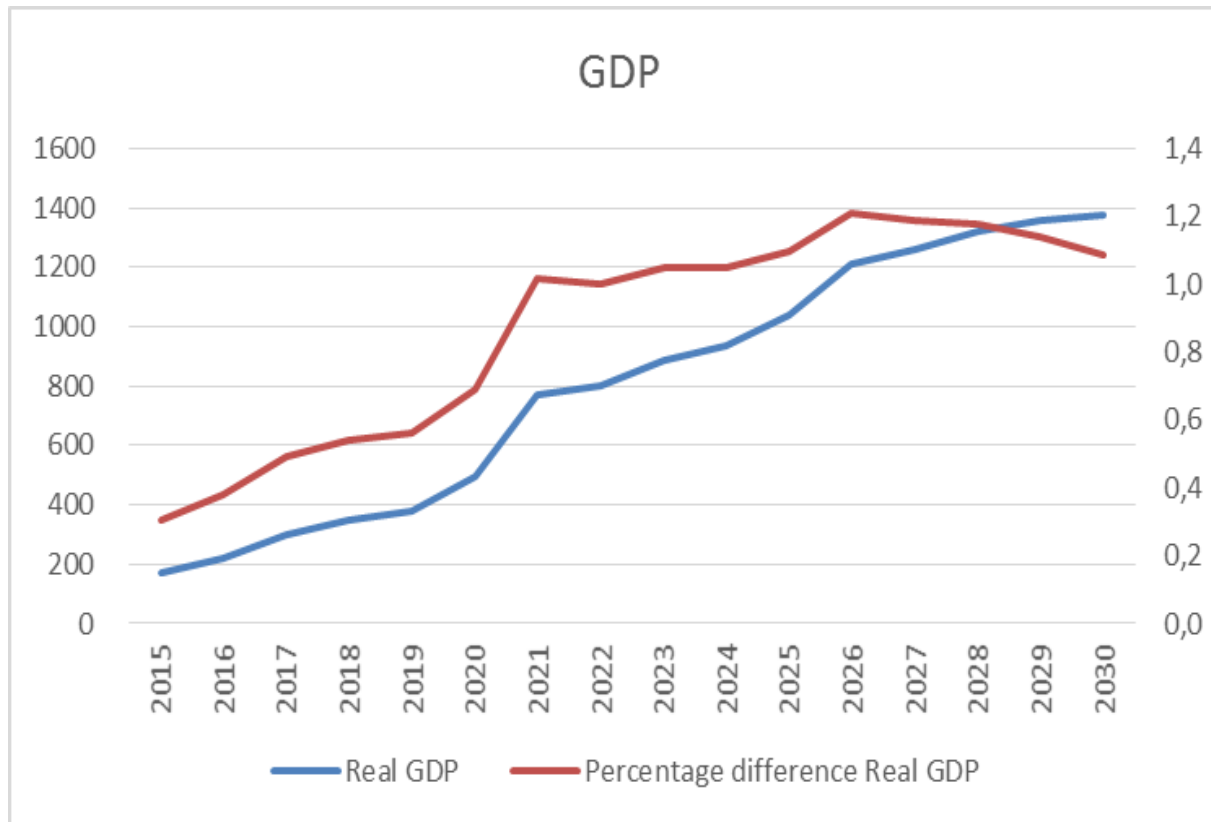
Results – macro economic: jobs and GDP (1)



- The scenario EEER exhibits up to 30,000 jobs more than a scenario without investment in EE&ER
- This in an increase by .6%



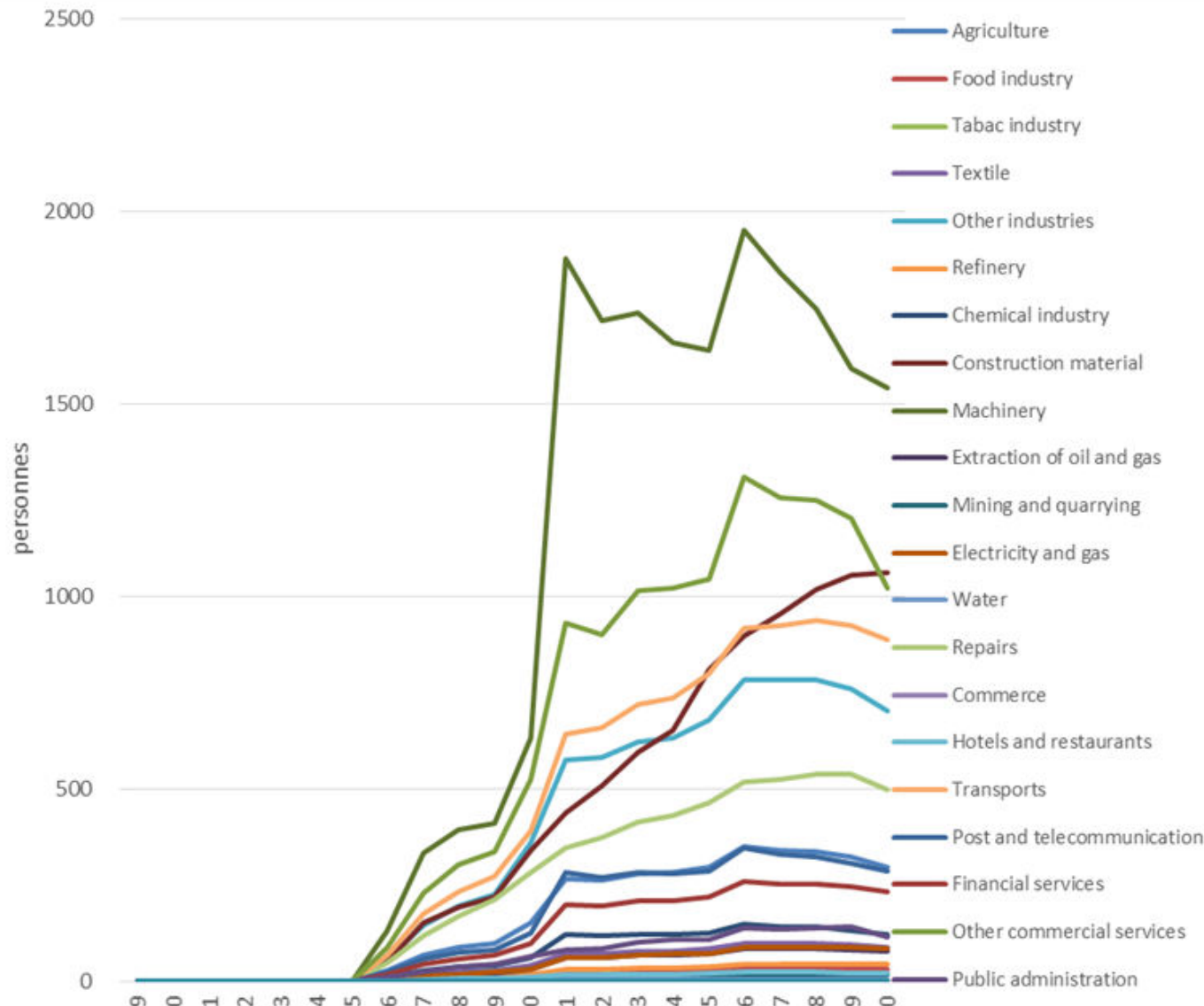
Results – macro economic: jobs and GDP (2)



- The EEER scenario exhibits a 1.4 billion Dinar difference at the maximum to the scenario without investment.



Results – structural effects: jobs



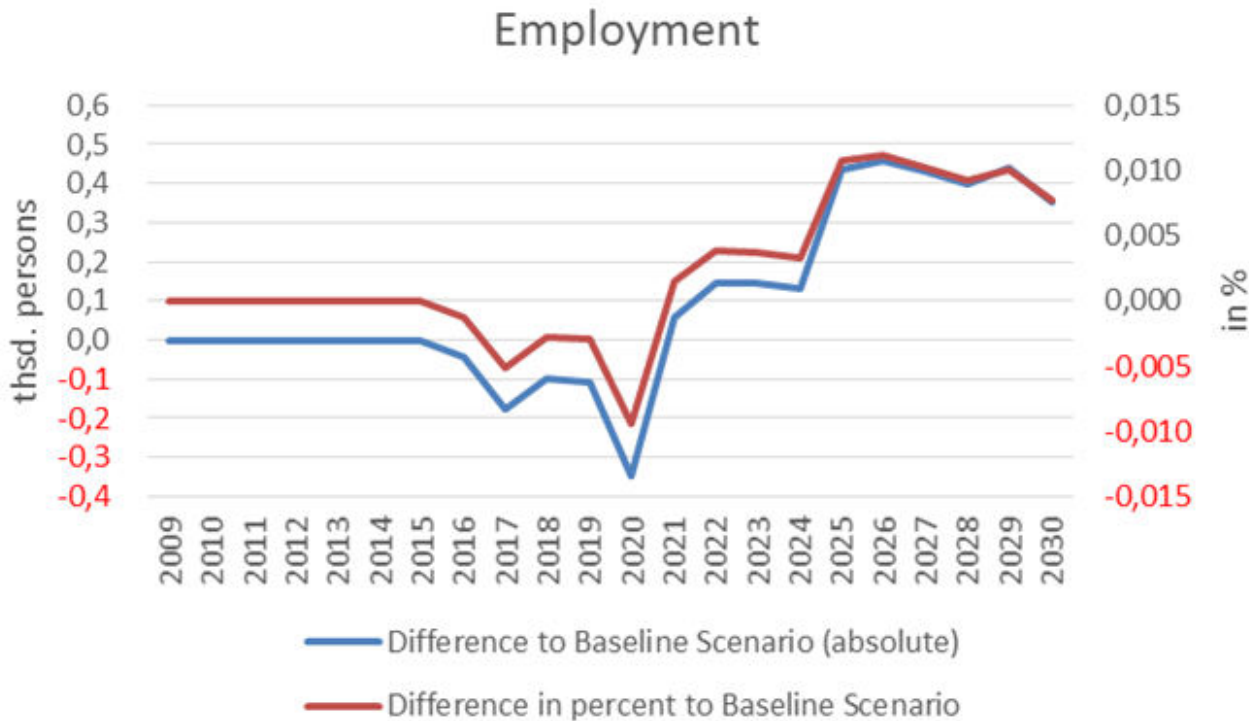
A wide range
of industries
wins.

The graph
shows results
without
construction.

Additional jobs
in construction
amount to
18,650.



Sensitivity: PV production in Tunisia



The effect from higher integration turns positive after 2020 and reaches a maximum in 2025. Then installations fall and productivity gains also counterbalance positive effects.



Conclusions and outlook

For Tunisia

- Investment in renewable energy yields additional employment in many economic sectors.
- Energy efficiency, particularly in buildings creates employment in a very labor intensive sector.
- All sectors require additional training and skills
- Higher integration creates additional jobs, but these will decrease from productivity gains



Conclusions and outlook

For other countries in the region

- Number matter in designing policies!
- A systematic approach makes numbers more convincing and transparent
- An economic model shows the job impact in all sectors of the economy
- Do you have the right data? YES!
- Input-output tables and economic data are provided by the statistical offices of Egypt, Morocco, Tunisia, etc.
- Data on already existing projects out need to be collected on the ground



Thank you for your attention!

Ulrike Lehr

T +49 (0) 40933 - 280

E lehr@gws-os.com



Introduction

- Renewable energy investment and installations have risen worldwide
- Investment climbed to almost \$300 billion
- Half of the newly added power generation capacity worldwide uses renewable sources
- Until 2008 Europe invested the most in RE, now China and the US spend more than Europe
- Who benefits from this development?
 - The environment from less emissions
 - The RE-users from less dependence, higher energy security and electricity access
 - Oil-producing RE-users from freeing additional resources for exports
 - The RE-planners from jobs
 - The RE-manufacturers from jobs



International development - consequences

- Lower prices led to growing demand for PV, especially in developing countries and emerging economies
- Announcement of ambitious targets triggers installation
- Announcement of ceiling at first also triggers installation, then slows installation
- Most jobs are found in photovoltaics in Asia
- Jobs differ in terms of qualifications along the value chain (see presentation by Sami Marrouki at the end of this workshop)